

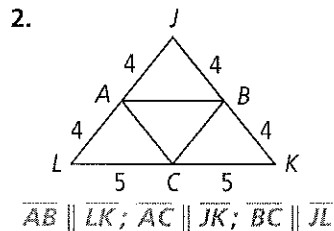
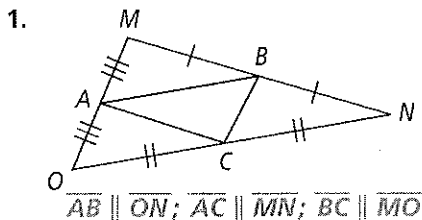
5-1

Practice

Form G

Midsegments of Triangles

Identify three pairs of triangle sides in each diagram.



Name the triangle sides that are parallel to the given side.

3. $\overline{AB} \parallel \overline{ZY}$

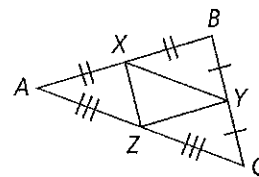
4. $\overline{AC} \parallel \overline{XY}$

5. $\overline{CB} \parallel \overline{ZX}$

6. $\overline{XY} \parallel \overline{AC}$

7. $\overline{XZ} \parallel \overline{BC}$

8. $\overline{ZY} \parallel \overline{AB}$


Points M , N , and P are the midpoints of the sides of $\triangle QRS$.
 $QR = 30$, $RS = 30$, and $SQ = 18$.

9. Find MN . 9

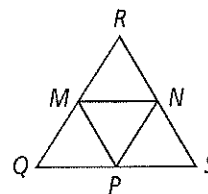
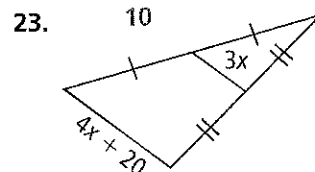
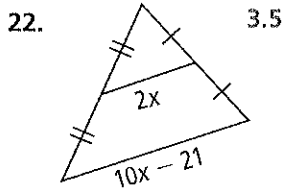
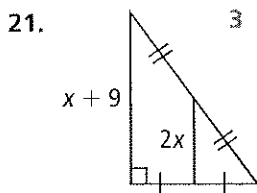
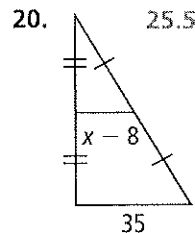
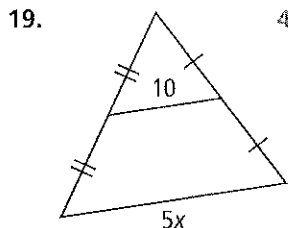
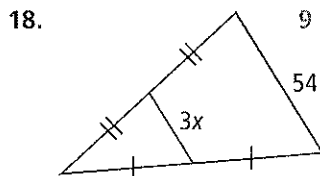
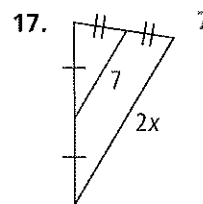
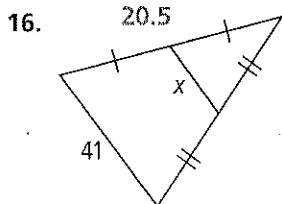
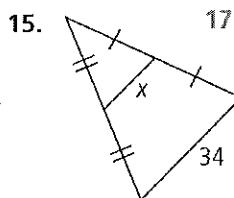
10. Find MQ . 15

11. Find MP . 15

12. Find PS . 9

13. Find PN . 15

14. Find RN . 15


Algebra Find the value of x .


5-1

Practice (continued)

Form G

Midsegments of Triangles

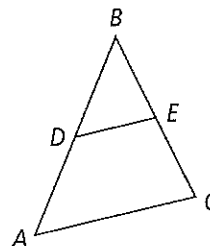
D is the midpoint of \overline{AB} . E is the midpoint of \overline{CB} .

24. If $m\angle A = 70$, find $m\angle BDE$. 70

25. If $m\angle BED = 73$, find $m\angle C$. 73

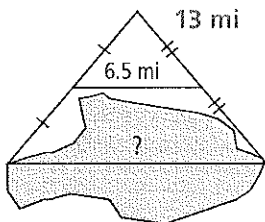
26. If $DE = 23$, find AC . 46

27. If $AC = 83$, find DE . 41.5

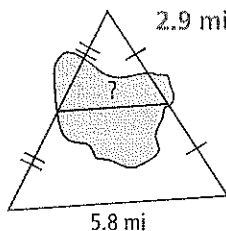


Find the distance across the lake in each diagram.

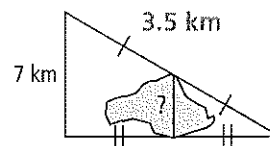
28. 13 mi



29. 2.9 mi



30. 3.5 km



Use the diagram at the right for Exercises 31 and 32.

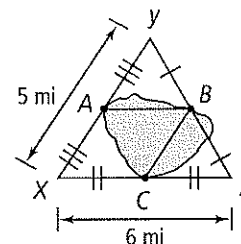
31. Which segment is shorter for kayaking across the lake,

\overline{AB} or \overline{BC} ? Explain.

\overline{BC} is shorter because BC is half of 5 mi, while AB is half of 6 mi.

32. Which distance is shorter, kayaking from A to B to C , or walking from A to X to C ? Explain.

Neither; the distance is the same because $\overline{BC} \cong \overline{AX}$ and $\overline{AB} \cong \overline{XC}$.



33. **Open-Ended** Draw a triangle and all of its midsegments. Make a conjecture about what appears to be true about the four triangles that result. What postulates could be used to prove the conjecture? Check students' drawings. Conjecture: The four triangles formed by the midsegments of a triangle are congruent. The SAS or SSS postulates can be used in each case to show that each triangle is congruent to the others.

34. **Coordinate Geometry** The coordinates of the vertices of a triangle are $K(2, 3)$, $L(-2, -1)$, and $M(5, 1)$.

a. Find the coordinates of N , the midpoint of \overline{KM} , and P , the midpoint of \overline{LM} .
 $N(3.5, 2)$; $P(1.5, 0)$

b. Show that $\overline{NP} \parallel \overline{KL}$. The slope of $\overline{NP} = \frac{2 - 0}{3.5 - 1.5} = 1$ and the slope of $\overline{KL} = \frac{3 - (-1)}{2 - (-2)} = 1$. Because the slopes are equal, $\overline{NP} \parallel \overline{KL}$.

c. Show that $NP = \frac{1}{2}KL$. $NP = \sqrt{(3.5 - 1.5)^2 + (2 - 0)^2} = 2\sqrt{2}$ and $KL = \sqrt{(-2 - 2)^2 + (-1 - 3)^2} = 4\sqrt{2}$ so $NP = \frac{1}{2}KL$.